Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of claims:

Claim 1 (previously presented): An electrical current generating system, comprising:

at least one fuel cell operating at a temperature of at least about 250°C;

at least one gas system selected from a hydrogen gas separation system or an adsorptive-enriched oxygen gas delivery system coupled to the fuel cell, the hydrogen gas separation system or adsorptive-enriched oxygen gas delivery system including at least one device selected from a compressor or pump; and

a drive system for the compressor or pump that includes means for recovering energy from at least one of the hydrogen gas separation system, an oxygen gas delivery system, or heat of the fuel cell.

Claim 2 (original): The system according to claim 1, wherein the fuel cell is a molten carbonate fuel cell or a solid oxide fuel cell.

Claim 3 (original): The system according to claim 1, wherein the fuel cell is operated at a temperature of at least about 600°C.

Claim 4 (original): The system according to claim 1, wherein the means for recovering energy comprises at least one system selected from a gas turbine, heat exchanger, or Stirling engine.

Claim 5 (canceled).

Claim 6 (original): The system according to claim 1, wherein the pump comprises a vacuum pump.

Claim 7 (previously presented): An electrical current generating system, comprising:

at least one fuel cell operating at a temperature of at least about 250°C;

at least one gas system selected from a hydrogen gas separation system or an adsorptive-enriched oxygen gas delivery system coupled to the fuel cell; and

a gas turbine system coupled to the hydrogen gas separation system or adsorptive-enriched oxygen gas delivery system, wherein the gas turbine system is powered by energy recovered from at least one of the hydrogen gas separation system, an oxygen gas delivery system, or heat of the fuel cell.

Claims 8-11 (canceled).

Claim 12 (original): The system according to claim 7, wherein the gas turbine system is further coupled to at least one device selected from a compressor, a pump, or an auxiliary device.

Claim 13 (previously presented): An electrical current generating system, comprising:

at least one fuel cell selected from a molten carbonate fuel cell or a solid oxide fuel cell;

at least one gas system selected from a hydrogen gas separation system or an adsorptive-enriched oxygen gas delivery system coupled to the fuel cell; and

a gas turbine system coupled to the hydrogen gas separation system or adsorptive-enriched oxygen gas delivery system, wherein the gas turbine system is powered by energy recovered from at least one of the hydrogen gas separation system, an oxygen gas delivery system, or heat of the fuel cell.

Claim 14 (original): An electrical current generating system, comprising:

at least one fuel cell operating at a temperature of at least about 250°C;

at least one gas system selected from a hydrogen gas separation system or oxygen gas separation system coupled to the fuel cell, wherein the hydrogen gas separation system can produce a first exhaust gas stream and the oxygen gas separation system can produce a second exhaust gas stream; and

a gas turbine system coupled to at least one of the hydrogen gas separation system or oxygen gas separation system, wherein the gas turbine system receives at least one of the first exhaust gas stream or second exhaust gas stream.

Claim 15 (original): The system according to claim 14, wherein the fuel cell operates at a temperature of at least about 600°C.

Claim 16 (original): The system according to claim 14, wherein the hydrogen gas separation system comprises a first adsorption module and the first exhaust gas stream is enriched in carbon dioxide.

Claim 17 (original): The system according to claim 16, further comprising a combustor that defines a first inlet for receiving the first exhaust gas stream and an outlet for discharging a combustion product gas stream.

Claim 18 (original): The system according to claim 17, further comprising a first conduit fluidly coupling the combustor outlet and a cathode inlet defined by the fuel cell, a second conduit fluidly coupling a cathode outlet defined by the fuel cell and the gas turbine system, and at least one heat exchanger housing at least a portion of the first conduit and at least a portion of the second conduit.

Claim 19 (original): The system according to claim 17, further comprising at least one conduit fluidly coupling the combustor outlet and the gas turbine system.

Claim 20 (original): The system according to claim 14, wherein the gas turbine system includes at least one device selected from a compressor and a vacuum pump.

Claim 21 (original): The system according to claim 16, wherein the first adsorption module comprises a rotary pressure swing adsorption module.

Claim 22 (original): The system according to claim 21, wherein the gas turbine system includes at least one device coupled to the rotary pressure swing adsorption module, the device being selected from a compressor and a vacuum pump.

Claim 23 (canceled).

Claim 24 (original): An electrical current generating system, comprising:

an oxygen-containing gas source;

at least one hydrogen gas separation module that can produce a hydrogen-enriched gas stream and a carbon dioxide-enriched gas stream;

a combustion device for producing a combustion product gas stream from the oxygen-containing gas and the carbon-dioxide enriched gas stream; and

at least one molten carbonate fuel cell having a cathode inlet for receiving the combustion product gas stream and an anode inlet for receiving the hydrogen-enriched gas stream.

Claim 25 (original): The system according to claim 24, wherein the hydrogen gas separation module comprises a pressure swing adsorption module.

Claim 26 (original): The system according to claim 24, further comprising a pressure swing adsorption module coupled to the oxygen-containing gas source that can produce an oxygen-enriched gas stream for delivery to the combustion device.

Claim 27 (original): The system according to claim 24, wherein the molten carbonate fuel cell has an outlet for discharging at least one fuel cell exhaust gas stream, the system further comprising a first heat exchanger that receives the fuel cell exhaust gas stream and the combustion product gas stream.

Claim 28 (original): The system according to claim 27, further comprising a hydrogen gas-generating reactor and a conduit for delivering a hydrocarbon fuel/water mixture to the hydrogen gas-generating reactor, wherein at least a portion of the hydrocarbon fuel/water mixture conduit is disposed within the first heat exchanger.

Claim 29 (original): The system according to claim 28, further comprising a pressure swing adsorption module coupled to the oxygen-containing gas source that can produce an oxygen-enriched gas stream for delivery to the hydrogen gas-generating reactor.

Claim 30 (original): An electrical current generating system, comprising:

at least one fuel cell having an anode outlet for discharging an anode exhaust gas and a cathode inlet, the fuel cell operating at a temperature of at least about 250°C;

a pressure swing adsorption module that can produce an oxygen-enriched gas stream; and

a combustion device for producing a combustion product gas stream from the oxygen-enriched gas stream and the anode exhaust gas; and

a conduit fluidly coupling the combustion device and the fuel cathode inlet for delivering the combustion product gas stream to the fuel cell cathode.

Claim 31 (previously presented): A process for providing at least one feed stream to at least one fuel cell operating at a temperature of at least about 250°C, comprising:

providing at least one of a hydrogen gas separation system or an adsorptive-enriched oxygen gas delivery system coupled to the fuel cell, the hydrogen gas separation system or adsorptive-enriched oxygen gas delivery system including at least one device selected from a compressor or vacuum pump;

recovering energy from at least one of the hydrogen gas separation system, an oxygen gas delivery system, or heat of the fuel cell; and

operating the compressor or vacuum pump at least partially with the recovered energy to provide at least one feed stream to the fuel cell.

Claim 32 (original): The process according to claim 31, wherein the energy recovering and operating comprise introducing at least one exhaust stream from the fuel cell, hydrogen gas separation system, or oxygen gas delivery system into at least one apparatus selected from a heat exchanger and a gas turbine.

Claim 33 (original): The process according to claim 31, wherein the fuel cell is operated at a temperature of at least about 600°C.

Claim 34 (canceled).

Claim 35 (original): A process for providing at least one fuel stream to at least one fuel cell operating at a temperature of at least about 250°C, comprising:

establishing a first pressure swing in a first fuel-containing gas stream under conditions sufficient for separating the first fuel-containing gas stream into a first fuel-enriched gas stream and a first fuel-depleted gas stream;

introducing at least one of the first fuel-enriched gas stream or the first fuel-depleted gas stream into a first apparatus for establishing the first pressure swing; and

introducing the first fuel-enriched gas stream into the fuel cell.

Claim 36 (original): The process according to claim 35, wherein the first pressure swing establishing comprises pressure swing adsorption, the first fuel-containing gas stream comprises a hydrogen-containing gas stream, the fuel-enriched gas stream comprises a hydrogen-enriched gas stream, the fuel-depleted gas stream comprises a carbon dioxide-enriched gas stream, and the apparatus introducing comprises introducing the carbon dioxide-enriched gas stream into a gas turbine as a working fluid for effecting the pressure swing adsorption.

Claim 37 (original): A process for providing an oxygen-containing gas stream and a carbon dioxide-containing gas stream to a cathode of a molten carbonate fuel cell, and a hydrogen-containing gas stream to an anode of the fuel cell, comprising:

separating a hydrogen-containing gas stream into a hydrogen-enriched gas stream and a carbon dioxide-enriched gas stream;

combusting a mixture of the carbon dioxide-enriched gas stream and an oxygen-containing gas stream to provide a combustion product gas stream;

introducing the hydrogen-enriched gas stream into the fuel cell anode; and

introducing the combustion product gas stream into the fuel cell cathode.

Claim 38 (original): The process according to claim 37, wherein the separating occurs via pressure swing adsorption.

Claim 39 (original): The process according to claim 37, further comprising oxygen-enriching an air feed stream to produce the oxygen-containing gas stream.

Claim 40 (original): The process according to claim 39, wherein the oxygen-enriching comprises introducing the air feed stream into a pressure swing adsorption module to produce an oxygen-enriched gas stream.

Claim 41 (original): The process according to claim 37, wherein the fuel cell discharges at least one fuel cell exhaust gas stream, the process further comprising transferring heat from the combustion product gas stream to the fuel cell exhaust gas stream.

Claim 42 (original): The process according to claim 41, further comprising introducing the heated fuel cell exhaust gas stream into a gas turbine.

Claim 43 (original): An electrical current generating system, comprising:

at least one fuel cell operating at a temperature of at least about 250°C;

a fuel cell heat recovery system coupled to the fuel cell;

at least one fuel-gas-delivery system coupled to the fuel cell; and

a gas turbine system coupled to the fuel cell heat recovery system and the fuel-gas-delivery system.

Claim 44 (original): The system according to claim 43, wherein the fuel cell is operated at a temperature of at least about 600°C.

Claim 45 (original): The system according to claim 43, wherein the fuel cell heat recovery system comprises a recirculation conduit for carrying a heat recovery working fluid for transferring heat energy from the fuel cell to gas expansion energy for the gas turbine system.

Claim 46 (original): The system according to claim 45, wherein the heat recovery working fluid is thermally coupled to a fuel cell exhaust gas stream.

Claim 47 (original): The system according to claim 43, wherein:

the fuel-gas-delivery system comprises a pressure swing adsorption module; and

the gas turbine system comprises at least one pump or compressor coupled to the pressure swing adsorption module, and an expander coupled to the pump or the compressor.

Claim 48 (original): The system according to claim 47, wherein the pressure swing adsorption module can produce an oxygen-enriched gas stream for delivery to the fuel cell.

Claim 49 (original): The system according to claim 47, wherein there is a first pressure swing adsorption module that can produce an oxygen-enriched gas stream for delivery to the fuel cell and a second pressure swing adsorption module that can produce a hydrogen-enriched gas stream for delivery to the fuel cell.

Claim 50 (original): An electrical current generating system, comprising:

at least one fuel cell selected from a molten carbonate fuel cell or a solid oxide fuel cell;

a fuel cell heat recovery system coupled to the fuel cell;

at least one fuel-gas-delivery system coupled to the fuel cell; and

a gas turbine system coupled to the fuel cell heat recovery system and the fuel-gas-delivery system.

Claim 51 (original): An electrical current generating system, comprising:

at least one fuel cell defining at least one inlet for receiving a fuel gas stream and at least one outlet for discharging a fuel cell exhaust gas stream, the fuel cell operating at a temperature of at least about 250°C;

at least one fuel gas delivery system for delivering the fuel gas stream to the fuel cell inlet;

a gas turbine system coupled to the fuel gas delivery system;

a first conduit fluidly communicating with the fuel cell outlet for carrying the fuel cell exhaust gas stream;

a second conduit for carrying a heat recovery working fluid and fluidly coupled to the gas turbine system; and

a first heat exchanger housing a first portion of the first conduit and a first portion of the second conduit.

Claim 52 (original): The system according to claim 51, wherein the fuel cell is operated at a temperature of at least about 600°C.

Claim 53 (original): The system according to claim 51, wherein:

the fuel gas delivery system comprises a pressure swing adsorption module that can produce an oxygen-enriched gas stream for delivery to a fuel cell cathode inlet; and

the gas turbine system comprises at least one pump or compressor coupled to the pressure swing adsorption module, and an expander coupled to the pump or the compressor, the expander defining an inlet for receiving the heat recovery working fluid.

Claim 54 (original): The system according to claim 53, wherein the electrical current generating system further comprises an air source for delivering air to the pressure swing adsorption module and to the second conduit as the heat recovery working fluid.

Claim 55 (original): The system according to claim 51, wherein the first conduit and the second conduit are proximally disposed within the heat exchanger such that heat is transferred from the cathode exhaust gas in the first conduit to the heat recovery working fluid in the second conduit.

Claim 56 (original): The system according to claim 51, wherein:

the fuel gas delivery system comprises a pressure swing adsorption module that can produce a hydrogen-enriched gas stream for delivering to a fuel cell anode inlet; and

the gas turbine system comprises at least one pump or compressor coupled to the pressure swing adsorption module, and an expander coupled to the pump or the compressor, the expander defining an inlet for receiving the heat recovery working fluid.

Claim 57 (original): The system according to claim 56, further comprising a hydrogen gas generating system coupled to the pressure swing adsorption module, the hydrogen gas generating system defining an outlet for delivering a hydrogen-containing gas feed stream to the pressure swing adsorption module and an inlet for receiving a hydrocarbon fuel.

Claim 58 (original): The system according to claim 55, further comprising a third conduit fluidly communicating with the hydrogen gas generating system inlet that can carry the hydrocarbon fuel, a fourth conduit fluidly communicating between the hydrogen gas generating system outlet and an inlet defined in the pressure swing adsorption module for receiving the hydrogen-containing gas feed stream, and a second heat exchanger housing a portion of the third conduit and the fourth conduit, wherein the third conduit and the fourth conduit are proximally positioned such that heat is transferred from the hydrogen-containing gas feed stream in the fourth conduit to the hydrocarbon fuel in the third conduit.

Claim 59 (original): The system according to claim 53, wherein the pump comprises a vacuum pump for extracting an oxygen-depleted gas stream from the pressure swing adsorption module and the fuel cell is operated at a temperature of at least about 600°C.

Claim 60 (original): The system according to claim 51, wherein the fuel cell defines a first outlet for discharging a cathode exhaust gas stream and a second outlet for discharging an anode exhaust gas stream, and the first conduit carries the cathode exhaust stream, the electrical current generating system further comprising a third conduit that carries the anode exhaust gas system, a portion of the third conduit being housed in the first heat exchanger.

Claim 61 (original): The system according to claim 51, further comprising at least one second heat exchanger housing a second portion of the first conduit and the second conduit, and wherein the gas turbine system includes at least two expander turbines and the second conduit fluidly communicates between the first heat exchanger, the second heat exchanger, and the two expander turbines.

Claim 62 (original): The system according to claim 51, wherein:

the fuel cell comprises a solid oxide fuel cell or a molten carbonate fuel cell;

the fuel gas delivery system comprises a first rotary pressure swing adsorption module for delivering an oxygen-enriched gas stream to a fuel cell cathode inlet and a second rotary pressure swing adsorption module for delivering a hydrogen-enriched gas stream to a fuel cell anode inlet; and

the gas turbine system is coupled to the first rotary pressure swing adsorption module and the second rotary pressure swing adsorption module.

Claim 63 (original): The system according to claim 51 wherein the fuel gas delivery system comprises a gas separation module that can produce a fuel-enriched gas stream for delivering to the fuel cell inlet.

Claim 64 (previously presented): A process for providing at least one fuel-enriched gas stream to at least one fuel cell operating at a temperature of at least about 250°C, comprising:

establishing a pressure swing in a fuel-containing gas stream under conditions sufficient for separating a fuel-enriched gas stream from the fuel-containing gas stream;

introducing the fuel-enriched gas stream into a fuel cell;

transferring heat from the fuel cell to a heat recovery working fluid; and

introducing the heat recovery working fluid into at least one compressor or pump for establishing the pressure swing.

Claim 65 (previously presented): The process according to claim 64, wherein the pressure swing establishing comprises pressure swing adsorption, the fuel-containing gas stream

comprises air, the fuel-enriched gas stream comprises an oxygen-enriched gas stream, and the compressor or pump comprises a gas turbine.

Claim 66 (original): The process according to claim 64, wherein the heat transferring comprises transferring heat from at least one fuel cell gas exhaust stream to the heat recovery working fluid.

Claim 67 (original): The process according to claim 65, wherein the heat recovery working fluid expands during introduction into the gas turbine to power a compressor or pump that generates the pressure swing.

Claim 68 (previously presented): A process for providing at least one fuel-enriched gas stream to at least one of a molten carbonate fuel cell and a solid oxide fuel cell, comprising:

establishing a pressure swing in a fuel-containing gas stream under conditions sufficient for separating a fuel-enriched gas stream from the fuel-containing gas stream;

introducing the fuel-enriched gas stream into a fuel cell;

transferring heat from the fuel cell to a heat recovery working fluid; and

introducing the heat recovery working fluid into at least one compressor or pump for establishing the pressure swing.

Claim 69 (original): A process for providing an oxygen-enriched gas stream to at least one of a molten carbonate fuel cell or a solid oxide fuel cell, comprising:

providing a first pressure swing adsorption module that can produce an oxygen-enriched gas stream for delivering to the fuel cell;

providing a gas turbine system coupled to the first pressure swing adsorption module; and

circulating a heat recovery working fluid stream through the gas turbine system, wherein a portion of the heat recovery working fluid stream is juxtaposed with at least one fuel cell exhaust gas stream.

Claim 70 (original): The process according to claim 69, wherein the gas turbine system comprises at least one expander coupled to a compressor or pump, and the heat recovery working fluid is introduced into the expander.

Claim 71 (original): The process according to claim 69, further comprising heating the oxygen-enriched gas stream prior to delivery to the fuel cell by juxtaposing a portion of the oxygen-enriched gas stream with at least one of the heat recovery working fluid stream and fuel cell exhaust gas stream.

Claim 72 (original): The process according to claim 69, further comprising providing a second pressure swing adsorption module that can produce a hydrogen-enriched gas stream for delivering to the fuel cell, wherein the gas turbine system is further coupled to the second pressure swing adsorption module.

Claim 73 (currently amended): An electrical current generating system, comprising:
at least one of a molten carbonate fuel cell or a solid oxide fuel cell; and
a rotary pressure swing adsorption module coupled to the fuel cell that can produce a hydrogen-containing gas for delivery to the fuel cell, the rotary pressure swing adsorption module including a first adsorbent and at least one second material selected from a second adsorbent and a steam reforming catalyst or water gas shift reaction catalyst.

Claim 74 (original): The system according to claim 73, wherein the first adsorbent preferentially adsorbs carbon dioxide compared to water vapor.

Claim 75 (currently amended): The system according to claim 74, wherein the rotary pressure swing adsorption module includes at least one first zone and at least one second zone, the first zone including the first adsorbent.

Claim 76 (original): The system according to claim 75, wherein the first adsorbent comprises an alkali-promoted material and the catalyst comprises a Cu-ZnO catalyst, a transition

metal carbonyl complex catalyst, or a catalyst comprising a transition group metal inserted into a zeolite cage.

Claim 77 (original): The system according to claim 75, further comprising a third zone that includes at least one desiccant.

Claim 78 (original): The system according to claim 74, wherein the catalyst is included in at least one of the first or second zone.

Claim 79 (previously presented): The system according to claim 76, wherein the alkali-promoted material is selected from alumina impregnated with potassium carbonate, hydrotalcite promoted with potassium carbonate, and mixtures thereof.

Claim 80 (previously presented): The system according to claim 1, wherein the hydrogen gas separation system comprises a pressure swing adsorption module operating at a temperature greater than ambient temperature.

Claim 81 (previously presented): The system according to claim 1, wherein the hydrogen gas separation system comprises a pressure swing adsorption module operating at about ambient temperature to about 1000°C.

Claim 82 (previously presented): The system according to claim 81, wherein the pressure swing adsorption module operates at about ambient temperature to about 200°C.

Claim 83 (previously presented): The system according to claim 81, wherein the pressure swing adsorption module operates at about 450°C to about 1000°C.

Claim 84 (previously presented): The system according to claim 81, wherein the pressure swing adsorption module operates at about 250°C to about 800°C.

Claim 85 (previously presented): The system according to claim 84, wherein the pressure swing adsorption module comprises a first adsorbent and a second adsorbent.

Claim 86 (previously presented): The system according to claim 85, wherein the first adsorbent preferentially adsorbs carbon dioxide.

Claim 87 (previously presented): The system according to claim 1, wherein the hydrogen gas separation system comprises a pressure swing adsorption module operating at about 150°C to about 800°C.

Claim 88 (previously presented): The system according to claim 7, wherein the hydrogen gas separation system comprises a pressure swing adsorption module operating at a temperature greater than ambient temperature.

Claim 89 (previously presented): A process according to claim 31, wherein the hydrogen gas separation system comprises a pressure swing adsorption module operating at a temperature greater than ambient temperature.

Claim 90 (previously presented): An electrical current generating system, comprising:

at least one fuel cell operating at a temperature of at least about 250°C;

at least one gas system selected from a hydrogen gas separation system or oxygen gas delivery system coupled to the fuel cell, the hydrogen gas separation system or oxygen gas delivery system including a pressure swing adsorption module and at least one device selected from a compressor or pump; and

a drive system for the compressor or pump that includes means for recovering energy from at least one of the hydrogen gas separation system, oxygen gas delivery system, or heat of the fuel cell.

Claim 91 (previously presented): An electrical current generating system, comprising:

at least one fuel cell operating at a temperature of at least about 250°C;

at least one gas system selected from a hydrogen gas separation system or oxygen gas delivery system coupled to the fuel cell, wherein the hydrogen gas separation system or the oxygen gas delivery system includes a pressure swing adsorption module; and

a gas turbine system coupled to the hydrogen gas separation system or oxygen gas delivery system, wherein the gas turbine system is powered by energy recovered from at least one of the hydrogen gas separation system, oxygen gas delivery system, or heat of the fuel cell.

Claim 92 (previously presented): The system according to claim 91, wherein the pressure swing adsorption module can deliver a hydrogen-containing gas to the fuel cell, the pressure swing adsorption module including a first adsorbent and at least one second material selected from a second adsorbent, a steam reforming catalyst, or a water gas shift reaction catalyst.

Claim 93 (previously presented): The system according to claim 92, wherein the first adsorbent preferentially adsorbs carbon dioxide compared to water vapor.

Claim 94 (previously presented): The system according to claim 93, wherein the first adsorbent comprises an alkali-promoted material and the catalyst comprises a Cu-ZnO catalyst, a transition metal carbonyl complex catalyst, or a catalyst comprising a transition group metal inserted into a zeolite cage.

Claim 95 (previously presented): A process for providing at least one feed stream to at least one fuel cell operating at a temperature of at least about 250°C, comprising:

providing at least one of a hydrogen gas separation system or oxygen gas delivery system coupled to the fuel cell, the hydrogen gas separation system or oxygen gas delivery system including a pressure swing adsorption module and at least one device selected from a compressor or vacuum pump;

recovering energy from at least one of the hydrogen gas separation system, oxygen gas delivery system, or heat of the fuel cell; and

operating the compressor or vacuum pump at least partially with the recovered energy to provide at least one feed stream to the fuel cell.

Claim 96 (new): An electrical current generating system, comprising:

a molten carbonate fuel cell; and

a pressure swing adsorption module coupled to the molten carbonate fuel cell that can produce a hydrogen-containing gas for delivery to the molten carbonate fuel cell, the pressure swing adsorption module including a first adsorbent and at least one second material selected from a second adsorbent and a steam reforming catalyst or water gas shift reaction catalyst.

Claim 97 (new): The system according to claim 96, wherein the first adsorbent preferentially adsorbs carbon dioxide compared to water vapor.

Claim 98 (new): The system according to claim 96, wherein the pressure swing adsorption module includes at least one first zone and at least one second zone, the first zone including the first adsorbent.

Claim 99 (new): An electrical current generating system, comprising:

at least one of a molten carbonate fuel cell or a solid oxide fuel cell; and

a pressure swing adsorption module coupled to the fuel cell that can produce a hydrogen-containing gas for delivery to the fuel cell, the pressure swing adsorption module including a first adsorbent and at least one second material selected from a second adsorbent and a steam reforming catalyst or water gas shift reaction catalyst,

wherein the first adsorbent is disposed in a first zone and the second material is disposed in a second zone, the first zone and the second zone being disposed adjacently along a hydrogen-containing gas flow path defined in the pressure swing adsorption module.